

Revisions to the Staff Report on the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Of Diazinon and Chlorpyrifos Runoff into the Lower San Joaquin River (17 October 2005 Version)

Revisions to the Staff Report

Page 7- In the second paragraph and under Section 1.2 “Background”:

Monitoring since 1991 by state and federal agencies and other groups has confirmed the ~~widespread~~ presence of diazinon, chlorpyrifos, and other pesticides in the SJR and its tributaries.

Page 13, paragraph 2- The most recent published information (2002 and 2003) on invertebrate populations from the IEP states that, “The general picture of greatly reduced abundance compared to baseline conditions in the early 1970s did not change in 2003, although some taxa did increase over 2002 levels.....The most abundant cladoceran genera in the upper estuary are *Bosmina*, *Daphnia* and *Diaphanosoma*. They are all native freshwater genera that have shown downtrends since the early 1970s in all seasons, especially in fall. Summer abundance has stabilized since the late 1980s and may even be gradually increasing. Abundance increased slightly in 2003 for all seasons.” Mecum, W. L. 2004. In addition, populations of striped bass, delta smelt, longfin smelt and threadfin shad are also decreasing and many are at all-time lows (Bryant, M. and Souza, K. 2004). The ocean catch of Central Valley Chinook salmon decreased in both the commercial and recreational fisheries in 2002 (Chappell, E. 2004). There are many factors that have contributed to these declines, and pesticides are likely to be one of these factors (Sommer, T. et. al. 2005).

Page 13, paragraph 3- The amount of pesticide available to be carried by runoff will be approximately equal to the amount applied during the dry period preceding the rainfall event, minus any that has volatilized, degraded, infiltrated into the ground, or remained bound to sediment particles at the ground surface, or to the plant itself.

Page 13, last paragraph, continues to page 14- Drip irrigation systems typically generate little or no runoff. If appropriately used, such irrigation methods are likely to minimize or eliminate irrigation season pesticide ~~loading~~. runoff from treated sites during the irrigation season.

Page 14, paragraph 3- This discussion refers to data Tables 1.1 through 1.4, which provide a summary of diazinon and chlorpyrifos use on agricultural crops in the lower San Joaquin Basin (Fig. 1.1) from 1995 to 2002.

Page 17, paragraph 2- under “Diazinon” heading, delete the sentence “The lack of exceedances may also be affected by the paucity of storms of sufficient magnitude to generate runoff and by a less intense sampling effort.”

Revisions to Staff Report on Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River

Page 19, Section 1.3 - remove the sentence “However, no enforcement of the court-ordered buffers is currently occurring.”

Page 39 – paragraph 7. ~~DPR has also indicated that it will go through a rule-making process to establish use restrictions for dormant sprays (CDPR, 2003b). A supplemental label for diazinon that requires additional management practices has been developed.~~ DPR initiated the rule-making process for its proposed dormant spray regulations. The public comment period closed on August 1, 2005. Additionally, the supplemental labels for diazinon dormant sprays have been approved by DPR and are currently binding in California. Similarly, agricultural products containing chlorpyrifos also have new updated labeling, which include requirements and advisories for protecting water quality. Those labels are currently under DPR review.

Page 47, paragraph 5- The Basin Plan states that the Regional Board will ~~use~~ consider 1/10th of the 96-hour LC50 of the most sensitive organism to interpret narrative objectives when water quality objectives or appropriate criteria are not available.

Page 62, insert after paragraph 3

~~The CDFG criteria for chlorpyrifos~~ criteria based on the CDFG dataset are the recommended water quality objectives. A number of alternative management practices are available to reduce the amount of chlorpyrifos introduced into the San Joaquin River. Available data indicate that the proposed objectives ~~is~~ are often attained in the San Joaquin River.

The U.S. EPA water quality criteria were developed in 1986. The CDFG criteria and the dataset CDFG used are more recent (2000), and include additional and more recent toxicity studies. The CDFG criteria and dataset went through agency review by staff from the California Department of Pesticide Regulation, the Central Valley Water Board, and U.S. Environmental Protection Agency prior to their publication.

Toxicity studies used in criteria derivation often serve as surrogates for species that may or should be present in natural freshwater systems. Such an approach is necessary, since it is not always possible to develop viable testing protocols for all species of interests.

Another important factor considered is that criteria are derived from a small number of species when compared to the actual number that are likely to be present in the aquatic environment. The proposed diazinon objectives were based on toxicity studies of 17 species of invertebrates and fish and the chlorpyrifos objectives were based on toxicity studies of 20 species.

Although an exact aquatic species count for the San Joaquin River watershed is not available, a recent study Brown and May (2004) found 126 taxa of macroinvertebrates present at five sites in the lower San Joaquin River Basin. Brown and May collected a large number of organisms, but were only able to classify 87 groups of organisms down to species. Twenty-five groups of organisms were classified to genus, 10 to family, 2 to order, and 2 to class. Since each higher level of taxonomic classification encompasses a

Revisions to Staff Report on Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River

greater number of species, it is likely that the 126 taxa of macroinvertebrates identified actually represent a much larger number of macroinvertebrate species. The Brown and May study was conducted in a single year, so it is unknown to what extent different hydrologic conditions would change the distribution of species. Additionally, Brown and May collected benthic macroinvertebrates, which are found in the streambed, but did not collect zooplankton, which would be found in the water column.

With respect to fish species, Moyle (2002) provides an estimate of 68 native and introduced fish species in the Central Valley subprovince, which includes both the Sacramento and San Joaquin Rivers.

The limited information available on aquatic species in the San Joaquin River watershed suggests that the objectives are based on less than 1/10th of the number of invertebrate and fish species present in the San Joaquin River. The objectives, therefore, may not capture the full range of sensitivity to diazinon and chlorpyrifos. The limited number of studies used to derive the criteria compared to the number of species likely present in the San Joaquin River suggests that any adopted water quality objectives for diazinon and chlorpyrifos should be conservative to ensure protection of the full range of aquatic species.

Page 68 – replace Equation 6 with Equation 1.

Page 68, paragraph 3- The term “toxic units” has been replaced with “the sum of one”.

Page 72, paragraph 3- Insert after paragraph 4

The available information indicates that one or a combination of the three general approaches discussed above could be used to successfully reduce peak diazinon and chlorpyrifos concentrations and consistently meet the proposed loading capacity and load allocations.

Finally, the University of California Statewide Integrated Pest Management Program has recently revised the recommendations for pest management in almonds. If followed, these recommendations could substantially reduce almond growers’ reliance on conventional pest management practices. The on-line version of the recommendations can be found at <http://www.ipm.ucdavis.edu/PMG/C003/m003yi01.html>. Similar revisions are currently underway for pest management in stone fruits.

Figures 1.8, 1.12, 1.13. Data points plotting above 1 ~~are toxic~~ represent non-compliance with the additive toxicity formula.

Revisions in Multiple Sections of the Staff Report

A number of changes to the Amendment identified in the August 2005 Staff Report are being made. The original recommendations are often referred to in multiple sections of the August 2005 Staff report. The final Staff Report will be revised to reflect those

Revisions to Staff Report on Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the San Joaquin River

changes adopted by the Central Valley Water Board. The main changes to the Amendment to which references are made throughout the Staff Report include:

1. The recommended adoption of the diazinon water quality objectives.
2. The extension of the compliance date for two additional years, from 2008 to 2010 for the dormant season prohibition and from 2009 to 2011 for the irrigation season prohibition.
3. The revision of the prohibition language to clarify its applicability.